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GEOGRAPHIC SCHOOL BULLETINS

Published Weekly by

THE NATIONAL GEOGRAPHIC SOCIETY

(The National Geographic Society is a scientific and educational Society, wholly altruistic, incorporated as a non-commercial institution for the increase of geographic knowledge and its popular diffusion. General Headquarters, Washington, D. C.)

November 15, 1943. Vol. XXII. No. 19.

1. Russian Victories Reclaim Industrial Cities
2. Behind-the-Lines Bases in Italy
3. U. S. Rice Crop Tops Records
4. Bengal, Scene of Famine, Hungers for Burma's Rice
5. Geo-Graphic Brevities

THROUGH GLASSES NOT ROSE - COLORED, A WORKER CONTEMPLATES THE U.S.S.R.'S STEEL PRODUCTION

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GEOGRAPHIC SCHOOL BULLETIN

HOW TEACHERS MAY OBTAIN THE BULLETINS

The Geographic School Bulletins are published weekly throughout the school year (thirty issues) and will be mailed to teachers in the United States and its possessions for one year upon receipt of 25 cents (stamps or money order); in Canada, 50 cents. Originally entered as second-class matter January 27, 1922; re-entered as of April 27, 1943, Post Office, Washington, D. C., under Act of March 3, 1879. Copyright, 1943, by National Geographic Society, Washington, D. C. International copyright secured. All rights reserved. Quedan reservados todos los derechos.

Russian Victories Reclaim Industrial Cities

IN driving Nazi invaders out of the Ukraine, the Russians have recaptured the war-wrecked shells of cities which were once among the leading industrial centers of the U.S.S.R. As the Germans approached more than two years ago, as much as possible of the equipment of the Ukraine's industries was evacuated eastward to centers in the Ural Mountains (illustration, cover) and beyond. With the Ukraine freed, the resources of these regions can be restored to production.

Krivoi Rog, Where Iron Is Treasure

Before capture by the Nazis, Krivoi Rog was a young city of 70,000 in the area outlined by the great eastward bend of the Dnieper River (Dnepr). It stood in the deep valley of the Ingulets, a Dnieper tributary. The city had iron foundries, iron-ore smelters, steel mills, and factories making farm machinery.

Krivoi Rog mines tapped one of the richest deposits of iron ore in the world. From 40 to 70 per cent of the ore was iron. Many of the mines, dug deep into hillsides, were mechanized to increase the speed and volume of ore output.

Steel, essential to modern warfare or peacetime construction, calls for iron plus alloys plus coal for coke. Krivoi Rog under Soviet administration grew to national importance because the city's iron mines were linked by railway with the rich coal mines of the Donets River basin 200 miles east. Between these two basic mineral deposits, 50 miles southeast of Krivoi Rog, are the Nikopol mines of manganese, the most generally used alloy for steel.

Before the outbreak of war a constant stream of railroad cars carried Donets coal to the iron smelters of Krivoi Rog, and returned to smelters in the Donets region with loads of Krivoi Rog ore, so that both areas were able to produce a maximum of steel. Production developed so rapidly that more than half of the U.S.S.R.'s prewar steel came from the Ukraine, formerly a farm region.

Dnepropetrovsk: Electric-Powered City of Steel and Aluminum

Before its destruction by retreating Russians and its capture by the Germans in 1941, Dnepropetrovsk was one of the Soviet Union's key metal-making centers. The city stands on the west bank of the Dnieper where the river swings southward on its great bend.

Dnepropetrovsk is within easy reach of the iron mines of Krivoi Rog to the southwest, the coal of the Donets basin to the east, the bauxite deposits of the Dnieper valley, the Nikopol manganese, and the hydroelectric power of the Dnieper River rapids. Franco-Belgian interests started iron foundries there in 1895. Full use of the Ukraine's mineral resources, pushed by the Soviets, made a Dnepropetrovsk boom inevitable. In the 1926 census the city registered 188,000 inhabitants; in 1939 its population was 500,000.

A big factor in the phenomenal growth was the completion of the huge Dneprostroy Dam on the rapids of the Dnieper 60 miles to the south. Vast quantities of its electric power ran Dnepropetrovsk's huge plants until the dam was dynamited by retreating Russians in an effort to prevent its use by the Germans. One of the principal users of this power was the Dnieper Aluminum Combine, extracting aluminum from local bauxite ores (illustration, next page).

Not only the city itself but also its environs were patterned with a Pittsburgh-

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Clifton Adams

HARD-WORKING CHIPPEWA RICE HARVESTERS ARE BRINGING IN THEIR SHEAVES IN CANOES

Indians of Minnesota relished wild rice before the white man brought white rice to North America. Chippewas in Itasca State Park, Minnesota, still follow in their ancestors' canoe trails to collect the wild grain from watery margins of Lake Itasca. Sometimes harvest-boatmen work in ceremonial attire, complete with feather headgear (above); more often in overalls; always in pairs. A man stands in the bow of his birch-bark canoe and poles it slowly through the thick reedy growth with a long, forked pole. As the wild rice stalks bend over the craft, his helper, sitting in the stern, wields a stick in each hand to beat the bowing stalks against the canoe's gunwales. The grain falls into the boat. The rice is husked by being trampled beneath an Indian's shuffling feet or by being pounded with wooden clubs, mortar-and-pestle fashion. Harvesting cultivated rice in the United States, however, is a less picturesque and more mechanical procedure (Bulletin No. 3).

burned the plant and moved the equipment 1,280 miles east to Kamensk in the Urals. Aluminum, used also for incendiary bombs, comprises four-fifths of the weight of an average airp'ane.

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Behind-the-Lines Bases in Italy

THE bombing of military targets in Vienna indicates that the Allies are making use of recently gained bases in southern Italy, putting this formerly Axis area to use for United Nations purposes.

One of the most useful bases is at Foggia, a railway and market center for a gently rolling, treeless plain—farmland in peacetime, but in war well suited for landing fields. Eighty air miles northeast of Naples, the city is on the Naples-Benevento-Foggia-Manfredonia line (map, next page) that many geographers regard as the dividing line between central and southern Italy. Its peacetime population was 80,000.

A "Graveyard" Stores Foggia's Grain

Foggia was founded by the Normans in the 12th century, and was nearly destroyed by earthquake in 1731. It was rebuilt, with winding streets and low houses.

Its most distinctive feature is a large area that appears to be a neglected graveyard, but is in reality a space for underground storage of grain reserves used to supply macaroni manufacturers in Naples and many other Italian towns. A stone slab marks each storage vault.

The Foggia plain, which normally produces wines and olive oil in abundance, is one of Italy's leading sheep pastures. Foggia is consequently a wool center, the headquarters of a society for improving sheep breeds and the point for registering pedigreed animals.

Volturno Largest River South of Tiber

Another south Italy center is Capua, a town of some 9,000 inhabitants at the western foot of the Apennine Mountains. The Capua of Roman days had a half-million inhabitants and once rivaled Rome. Cesare Borgia of Florence captured Capua in 1501 after a bloody siege in which 5,000 people died.

Capua is the only sizable town in the valley of the Volturno River, which might be called a "Rubicon of the south" in the Allies' march on Rome. This was a decisive stream also when Garibaldi and his Italian patriot army, in their march to liberate and unite Italy in 1860, defeated the Bourbons of Naples in the Battle of the Volturno, on the river's south bank just east of Capua.

The Volturno is the largest river in Italy south of the Tiber. It is 96 miles long, following an L-shaped course from its source in the Apennines to empty into the Gulf of Gaeta. Its upper valley, cutting a north-south gash in the Apennine foothills, forms a corridor leading directly from Allied bases toward Rome.

For the last 20 miles of its course, the Volturno crosses a fertile coastal plain. Home of Falernian wine, this is a slice of the "garden of Italy." This stretch of coast of the Tyrrhenian Sea is so named for its olive, orange, and tangerine groves, rice fields, vineyards, and pasture lands.

NOTE: Italian cities recently made bases for Allied planes can be found on the Society's Map of Europe and the Near East.

See also: "Italy, from Roman Ruins to Radio," in the *National Geographic Magazine* for March, 1940*.

See the following GEOGRAPHIC SCHOOL BULLETINS: "The Appian Way, an Allied Road to Rome," November 1, 1943; and "Italy, Battleground of Caesars, Partitioned by Mountains," October 4, 1943.

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like maze of belching chimneys and flaming blast furnaces of dozens of metallurgical works, machine-building plants, and other factories.

NOTE: The Ukraine is shown on the Society's Map of Europe and the Near East. A price list of maps may be obtained from the Society's headquarters in Washington, D. C.

For further information, see "I Learn about the Russians," in the *National Geographic Magazine* for November, 1943; "Valiant Russia's Industrial Might," May, 1943; and "Mother Volga Defends Her Own," July, 1942.* *(Issues marked with an asterisk are included in a special list of Magazines available to teachers at 10¢ each in groups of ten.)*

See also in the GEOGRAPHIC SCHOOL BULLETINS: "Russian Drive Frees the Rich Ukraine," October 11, 1943; and "The Dnepr Line a Russian Battlefront Again," March 15, 1943.

Bulletin No. 1, November 15, 1943.

Sovfoto

DNEPROPETROVSK'S ALUMINUM PLANT WAS AN INCUBATOR FOR WAR BIRDS

In 1940, before the U.S.S.R. was attacked, the barrel-roofed aluminum plant at Dnepropetrovsk was the largest of three which gave the nation the world's fourth-ranking annual output of the vital light metal. Making one pound of aluminum required enough electricity to eat away three-fourths of a pound of the carbon in electrodes. This giant plant was powered from the near-by Dneprostroy Dam. Stacks of aluminum ingots, still in the shape of the molds into which they had been poured as molten metal, were piled outside the plant, where they were numbered with daubs of paint. Before Nazi invaders could reach this factory, the Russians burned the plant and moved the equipment 1,280 miles east to Kamensk in the Urals. Aluminum, used also for incendiary bombs, comprises four-fifths of the weight of an average airp'ane.

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United States Rice Crop Tops Records

RICE—boiled, fried, curried—suggests the Orient. But recent crop reports in the United States are reminders that the little white grain—buttered, puddinged, puffed, or showered on bride and groom—is important in the Occident as well.

Hundreds of millions of people eat little else in China, India, Japan, and neighboring countries of southeastern Asia. In that region about 97 per cent of the world's rice is grown.

Thus a virtual "monopoly" of the Orient, rice growing and milling is none the less a big and growing business in the United States. Lend-lease, military and civilian appetites, and the loss of import rice have sharply increased the demand for the home-grown grain since Pearl Harbor.

The rice States—Louisiana, Texas, Arkansas, and California—responded in 1942 with a record harvest of 66 million bushels, 30 per cent more than in 1941. With the 1943 growing season over, a million and a half of Uncle Sam's acres bear a still bigger crop this year, estimated at 69 million bushels.

United States Raises One Per Cent of World's Rice Crop

A shortage of workers in the rice-growing areas has been a serious harvest problem. German and Italian war prisoners who could help are banned from the majority of the rice fields by a rule prohibiting their use within 150 miles of the seacoast.

The 1942 crop pushed the United States output past the one per cent mark in terms of the world's estimated production. Louisiana supplied three-eighths of it —26 million bushels. The other States were closely grouped in millions of bushels produced—Texas 15½, Arkansas 13½, California 11½.

About a quarter of the harvest, after milling, was shipped to Allied nations. The record tonnage exported was only a little more than the usual proportion of the United States crop to be shipped abroad. Since World War I, the United States has exported more than one-fifth of its rice. Exports have been four times imports. Cuba has been the Number One customer among more than fifty nations buying United States rice.

Colonists Brought White Rice to North America

Rice grew wild in the United States before Europeans came to colonize the country. Growing in marshlands from Canada to the Gulf of Mexico, it was a favorite food of waterfowl and Indian tribes (illustration, inside cover). Wild rice, with a longer, thinner brown grain, is actually the seed of a grass, distantly related to cultivated rice.

White rice was brought to North America and planted by colonists at Charleston, South Carolina, before 1700. This was at first a more important southern crop than cotton. By 1776 it had become an important export grain, cultivated along the Atlantic coast from the Carolinas south, and at a few places on the Gulf coast. Gradually, however, profits from eastern rice plantations diminished. The Civil War hastened the westward trend of rice farming.

In 1889 Louisiana won the production leadership and still holds it. The South Atlantic States dropped out of the rice picture. Rice growing spread to southeastern Texas at the turn of the century, to the eastern Arkansas prairies in 1905, and to California in 1912. Machine-age methods unknown to the Orient

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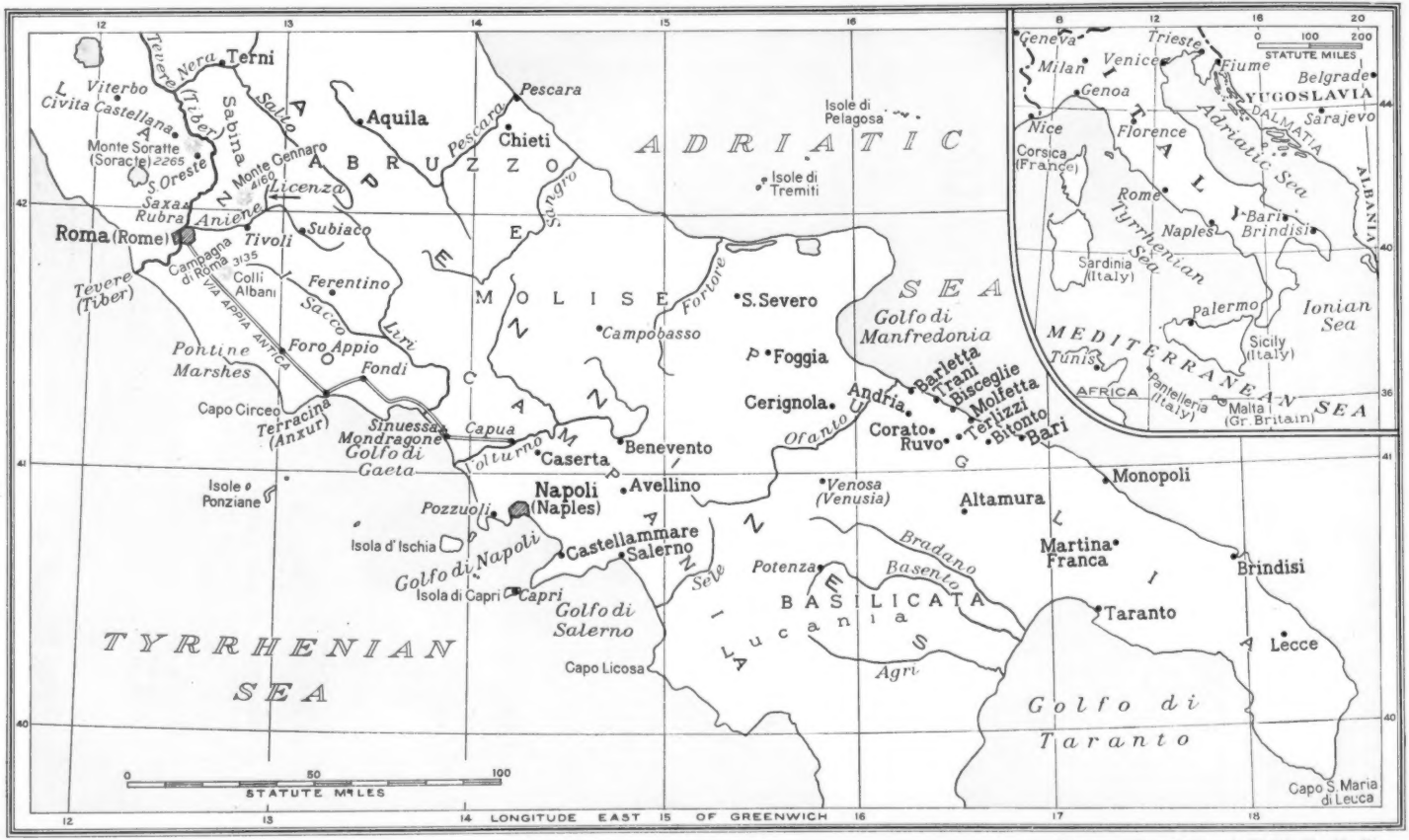

Newman Bumstead and *Ralph E. McAleer*

ALLIED BASES SOUTH OF ROME HAVE REMOVED A FASCIST SHACKLE FROM THE ANKLE OF THE ITALIAN BOOT

Battlefields in southern Italy have contributed many place names to United States headlines—Salerno, Naples, Benevento, Foggia, the Volturno River. The inset shows the importance of Bari and Brindisi in their relation to the Balkans.

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Bengal, Scene of Famine, Hungers for Burma's Rice

INDIA's densely peopled province of Bengal is suffering one of the worst famines of its recent history. The province is the source of the United States' imports of jute and burlap, now especially needed for sandbags and camouflage cloth, for baling cotton and bagging grain and other foods.

Bengal spreads over 82,955 square miles, supports 60,314,000 people, nearly half as many as the whole United States. This is more than one-seventh of India's population of 388 million. On an area twice the size of Ohio, the province has eight times the population of the Buckeye State.

The metropolis of Bengal is Calcutta, whose one and a half million people make it India's largest city and the second largest in the British Empire, ranking next to London.

Japan Holds Rice-Exporting Countries

With more than 760 people to a square mile, even the fertility of Bengal's fields does not always enable the province to feed the enormous population. Calcutta in normal times receives most of the rice India imports from Burma, as well as much of that from Thailand and French Indo-China. Before the war, rice imported from Burma alone amounted to between 1,000,000 and 1,500,000 tons.

Now Japan holds the three rice-exporting countries from which Bengal supplemented the rice rations of its crowded millions. The necessity of maintaining an army to the east of Bengal in Assam, on the Burma frontier, cuts down on the quantity of rice which might be supplied from Assam, as well as on the transportation available to serve civilian needs.

History recalls an earlier famine in which one-third of Bengal's population perished within a year.

Bengal is compounded of foothills of the Himalaya Mountains in the north and in the south the lower reaches of the Ganges and Brahmaputra Rivers. The mouths of these rivers form one of the most extensive deltas in the world.

Delta Land Is Rich

The province's coastal fringe, a waterlogged patchwork of jungle islands infested with tigers and snakes, is known as the Sundarbans. One of the many mouths of the Ganges threading this forbidding area is the Hooghly River. Large steamers from all the world warily navigate this shifty, silt-filled stream and, 80 miles inland, reach Calcutta, one of the world's great ports.

North of the delta the province is flat and in some areas marshy, almost to the foothills of the Himalaya Mountains. At the northern tip of roughly triangular Bengal, Darjeeling sits on a foothill spur of the world's highest mountains. Its 7,000-foot altitude makes it a resort for Europeans trying to weather the sultry summer of India. It is the summer capital of Bengal and often in the news as the starting place of expeditions to climb Himalayan peaks. Above Darjeeling towers mighty Kanchenjunga, a peak 28,156 feet high, only 850 feet short of Mt. Everest's skyscraping summit. From Darjeeling's Observatory Hill, across an intervening valley 6,000 feet deep, can be seen a rise of 27,000 feet.

A "toy" train winding down to the steamy Bengal plain from Darjeeling takes a day and a night to reach Calcutta. The commerce of nearly all Bengal feeds the giant maw of this great center, which was the capital of British India from its

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were the foundation of today's rice industry. Without them American rice growers could not grow rice for profit in competition with low-wage Oriental labor.

Around Crowley, in southwestern Louisiana, are typical American rice lands. Large, level fields partitioned by low dikes are plowed by heavy tractors in late fall, harrowed in the early spring, machine-seeded from March to June. When the young rice is four to six inches high the fields are flooded two to four inches deep from canals. Two weeks before harvest the fields are drained. They are dry and hard, usually, when mechanical binders harvest the crop (illustration, below). Machine threshing follows after two weeks of drying.

Then come the milling operations—clipping, grading, hulling, pearling, polishing. Methods employed in milling rice in the United States have been adopted also in the rice centers of the Orient, such as Rangoon in Burma, where machinery has been installed.

Bulletin No. 3, November 15, 1943.

Artcraft

NOT WATER BUFFALO BUT OLD DOBBIN HIMSELF HELPS HARVEST U. S. RICE

Rice, hand-planted and hand-picked in the Orient, can testify that the United States is a land of machines. In this country the rice crop is sown by mechanical drills or—in California—by airplane. At harvest time the rice fields are drained so that they can dry out and, under ideal circumstances, permit harvesting by tractor-drawn combines which cut and bind the stalks and thresh the grain. Often, however, there is a "wet harvest," when the fields are too muddy for heavy machinery. Then horses and mules pull mechanical binders through the grain, as in this field photographed on the Gulf coast of Texas. Uncut grain (right background) looks to the uninitiated like barley. The sheaves are dried for a couple of weeks before the grain is threshed out.

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Geo-Graphic Brevities

KASSEL'S WAR PLANTS IN GRIMMS' FAIRY TALES SETTING

TWO great factors in war—munitions and transportation—have made Kassel in western Germany a "repeat" target of Allied bombers. The city was also attacked indirectly when floods from the blasted Eder Dam swept away power stations and disrupted production of gliders, ammunition, chemicals, textiles, optical goods, and scientific instruments.

Kassel's locomotive works, the largest in Germany, have contributed to German rail lines since 1848. There in 1706 Denis Papin, inventor of the safety valve, made his first important experiments on the use of steam power.

This thousand-year-old city of 200,000 inhabitants lies on both banks of the Fulda River, a stream fed by the Eder. Kassel is forty winding miles below the Eder Dam. Girdled with wooded and landscaped hills, it was known to tourists for its valuable paintings by Rembrandt, Rubens, Van Dyck, and other old masters.

Kassel's library of 300,000 volumes and some 5,000 old manuscripts was once presided over by the Grimm brothers. These famous mythologists, although born in Hanau, were for many years residents of Kassel, and the house at 24 Wildemannsgasse, where they lived while editing their famous collection of fairy tales, still stood at the outbreak of the war. From old manuscripts, books, and from the mouths of people they gathered the popular folk tales which, published in 1812, gave succeeding generations of children the stories of Hansel and Grethel, Rumpelstiltskin, and the Brave Little Tailor.

Among the city's attractions were its medicinal baths and springs, its old Gothic buildings, half-timbered houses whose upper stories jutted out over the sidewalks, and palaces built with money from the "sale" of Hessian subjects to England as mercenary soldiers.

Kassel's environs also have literary associations. Fifteen miles downstream from Kassel, to the northeast, the Fulda joins the Werra River to form the more famous Weser. On this river lie Bodenwerder, birthplace of Baron Münchausen of tall-story fame, and Hameln, city of the legend made famous by Robert Browning's poem, "The Pied Piper of Hamelin."

NOTE: Kassel may be located on the National Geographic Society's Map of Central Europe and the Mediterranean.

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CONVOY SYSTEM STEMS FROM PIRACY

DESTROYERS and corvettes which today convoy supply ships over submarine-infested seas (illustration, next page) follow an old Roman custom.

Pirates first made convoys necessary. To destroy these maritime marauders, Rome increased the speed of light, swift sailing galleys with banks of oars, and used them to convoy slower trading vessels.

Piracy became more menacing when nations encouraged it to block trade rivals. The Hanseatic League of German port cities was formed partly to afford protection from pirates. Merchant vessels, virtually warships when armed, protected themselves by sailing together in a fleet.

In 1580 England assigned warships to guard her fishing fleet. Wine and wool fleets were similarly protected, as was Spain's treasure fleet. During the

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founding in 1690 until 1912. Normally the port's ten miles of wharves handle immense quantities of jute, tea, hides, lac, cotton, oilseed, and coal.

Jute, Bengal's chief commercial crop, is processed in miles of jute mills beside the Hooghly below Calcutta.

In Bengal eighty languages are spoken. Hindus and Moslems are about equally divided at 21 and 27 million respectively. There are also Buddhists, Christians, Sikhs, Jains, Zoroastrians, and Jews.

NOTE: For the situation of Bengal's Ganges delta in relation to the trade routes of the Orient, see the Society's Map of the Indian Ocean. The Province of Bengal is shown on a two-page map in the article, "India—Yesterday, Today, and Tomorrow," in the *National Geographic Magazine* for October, 1943.

See also in the GEOGRAPHIC SCHOOL BULLETINS: "Somewhere in India," March 22, 1943; "The Varied Peoples of India," April 20, 1942; and "India, a War Chest of the British Empire," December 15, 1941.

Bulletin No. 4, November 15, 1943.

Joseph F. Rock

CALCUTTA, POOR IN RICE, IS RICH IN MARBLE

The famine-plagued port which is India's largest city displays the wealth it has enjoyed in recent years in the elaborately decorated Badri Das Jain Temple, dedicated to Sitalnath Ji, tenth of the 24 prophets of the Jain sect. The temple itself is surrounded by a priests' house, fountains, palm- and fern-bordered promenades, and numerous shelters for sculpture like the marble elephant with his two riders. They are adorned with marble panels carved in filigree so delicate that it resembles wood carving or wrought iron.

Napoleonic wars 220 years later the British admiral Lord Nelson, charged with protecting ships to Sicily, Italy, and the Levant, complained, "I am pulled to pieces by the demands of merchants for convoy." The marauders were then privateers —privately owned ships, armed and commissioned to sail against an enemy.

In the American Revolution cruisers and converted merchantmen of the infant U. S. Navy acted as convoys and gave American shipping protection from enemy privateers and smaller warships.

In the War of 1812, U. S. cruisers and privateers captured more than a thousand British merchantmen in spite of British convoy, largely in British waters where convoying was relaxed.

The United States fleet of 40 ships in the Civil War, busy blockading the South, left merchantmen from northern ports unprotected. Confederate cruisers took nearly 300 prizes valued at millions of dollars.

In World War I the U. S. Navy was active in convoy service, and in breaking up Germany's attempted submarine blockade of the British Isles. At the time of the Armistice more than 300 U. S. warships were active in European waters.

Today's convoy may consist of as many as 60 vessels, carrying perhaps 400,000 tons of such essential supplies as tanks, planes, and guns to Allied armies, food and clothing for the conquering and conquered people of lands devastated by war. The escort ships, with devices to detect submarines at a distance, take positions before and after and on each side of the convoy. The cargo ships spread out sideways because the sides of the ships are most vulnerable to attack. Therefore a convoy is usually wider than it is long. In case of attack the escorts rush to drop depth charges in a way designed to trap submarines in the area.

All sorts of ships form a convoy, from old whaling ships to modern freighters and tankers, run by oil, motors, and coal. Speed governs the selection for a particular convoy—all ships must have the same speed, regardless of type.

NOTE: For additional information, see "Cruise on an Escort Carrier," in the *National Geographic Magazine* for November, 1943; "Life with our Fighting Coast Guard," May, 1943; and "Convoys to Victory," February, 1943.

Bulletin No. 5, November 15, 1943.

British Combine

WATCHDOG ESCORTS SHEPHERD A CONVOY

Spread out in wide formation like a peaceful flock of sheep, these cargo vessels and their faithful escorts—cruisers and corvettes that have shepherded them across the stormy, submarine-infested Atlantic—are in the English Channel, nearing the moderately safe haven of English ports. There the invaluable tons of planes and guns and ammunition, food and clothing and medical supplies will be unloaded to back the attack in Europe. During the entire trip from a United States east-coast port, the ships have maintained positions which were assigned to their commanders at a conference just before sailing overseas. Difficulties of sailing in a set pattern are greatly increased by fog and by the blackout which the convoys must maintain throughout the long voyage.

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